IN THE CLAIMS:

Please write the claims to read as follows:

Please cancel claims 16, 28, 32, 39, 46, and 53 without prejudice.

1   1. (Currently Amended): A policer based on Random Early Detection (RED), compris-

2   ing:

3   a filter ~~that determines~~to determine a filtered virtual time debt, the filtered virtual

4   time debt determined based on an average difference between a time packets are expected

5   to arrive and a time the packets actually arrive; and

6   a control law circuit ~~that receives~~to receive the filtered virtual time debt from the

7   filter and ~~determines~~to determine whether a packet should be dropped.

1   2. (Currently Amended): The RED policer of claim 1, wherein a virtual time debt ~~uses~~is

2   configured to use a time T in which a packet is expected to arrive and is computed using

3   a predetermined output transmission rate.

1   3. (Original): The RED policer of claim 2, wherein predetermined output transmission

2   rate is given by a traffic contract.

1   4. (Previously Presented): The RED policer of claim 1, wherein the filter is based on an

2   exponential weighted moving average (EWMA) virtual time delay using the expression,

3         $EWMA_k = (1-g)EWMA_{k-1} + g(VTD)_k,$

4   where k indicates the presently received packet, and k-1 indicates the last packet

5   received, the virtual time debt (VTD) is computed by the expression: VTD = T(packet

6   expected to arrive) – T(packet actually arrives), and g is the gain of the filter.

1   5. (Currently Amended): The RED policer of claim 1, further ~~comprises~~comprising: a

2   sampler ~~that samples~~to sample a virtual time debt at a sampling interval, and ~~transmits~~to

3   transmit the sampled virtual time debt to the filter.

1   6. (Currently Amended): The RED policer of claim 1, further ~~comprises~~comprising:

2   a random generator ~~that generates~~to generate a number based on the control law

3   circuit's determination as to whether a packet should be dropped; and

4   a counter ~~that is~~configured to be set with the number generated by the random

5   generator, wherein the counter ~~counts~~is configured to count packets passing through the

6   RED policer up to the set number, and wherein the RED policer ~~drops~~is configured to

7   drop a packet when the counter has counted out the set number.

1   7. (Currently Amended): The RED policer of claim 6, further ~~comprises~~comprising:

2   the control law circuit ~~that determines~~to determine a probability of a packet being

3   dropped based on the filtered time debt exceeding a predetermined minimum threshold,

4   and ~~specifies~~to specify a range of numbers based on the probability; and

5   the random generator ~~that~~to randomly ~~generates~~generate a number in the range

6   specified by the control law circuit.

1   8. (Currently Amended): A policer based on Random Early Detection (RED), compris-

2   ing:

3

3   means for determining a moving average of a virtual time debt, the virtual time

4   debt determined based on a difference between a time packets are expected to arrive and

5   a time the packets actually arrive; and

6   means for determining whether a packet should be dropped based on a value of

7   the moving average of the virtual time debt.

1   9. (Original): The RED policer of claim 8, further comprises means for sampling a vir-

2   tual time debt at a sampling interval, and transmitting the result to the moving average

3   determining means.

1   10. (Original): The RED policer of claim 8, further comprises:

2   means for generating a random number based on the result of the packet dropping

3   means; and

4   means for counting a number of packets passing through the RED policer up to

5   the random number generated by the random number generating means, wherein the

6   RED policer drops a packet when the counting means has counted out the generated ran-

7   dom number.

1   11. (Currently Amended): A network device comprising:

2   a plurality of Random Early Detection (RED) policers, wherein each RED policer

3   includescomprises,

4   a filter that determinesto determine a filtered virtual time debt, the filtered

5   virtual time debt determined based on an average difference between a time pack-

6   ets are expected to arrive and a time the packets actually arrive; and

7   a control law circuit ~~that receives~~to receive the filtered virtual time debt

8   from the filter and ~~determines~~to determine whether a packet should be dropped;

9   and

10   a packet classifier ~~that determines~~to determine which packet should go to which

11   RED policer.

1   12. (Currently Amended): A method of policing packets in a network device, the

2   method comprising the steps of:

3   determining a filtered virtual time debt of a traffic, the filtered virtual time debt

4   determined based on an average difference between a time packets of the traffic are ex-

5   pected to arrive and a time the packets actually arrive;

6   comparing the filtered virtual time debt with a predetermined minimum threshold;

7   and if the filtered virtual time debt exceeds the minimum threshold, then

8   generating a random number that is used to determine which packet should be

9   dropped.

1   13. (Original): The method of claim 12, wherein generating a random number further

2   comprises the steps of:

3   generating the random number in a range based on a level by which the filtered

4   virtual time debt exceeds the minimum threshold;

5   setting a counter with the random number; and

6   dropping a packet when the counter has counted out the random number.

1   14. (Currently Amended): A computer readable medium having instructions contained

2   therein, which when executed by a computer performs a method comprising the steps of:

3   determining a filtered virtual time debt of a traffic, the filtered virtual time debt

4   determined based on an average difference between a time packets of the traffic are ex-

5   pected to arrive and a time the packets actually arrive;

6   comparing the filtered virtual time debt with a predetermined minimum threshold;

7   and if the filtered virtual time debt exceeds the minimum threshold, then

8   generating a random number that is used to determine which packet should be

9   dropped.

1   15. (Original): The medium of claim 14, wherein generating a random number further

2   comprises the steps of:

3   generating the random number in a range based on a level the filtered virtual time

4   debt exceeds the minimum threshold;

5   setting a counter with the random number; and

6   dropping a packet when the counter has counted out the random number.

1   16. (Canceled).

1   17. (Currently Amended): A method of policing packets in a network device, the

2   method comprising the steps of:

3   determining a filtered virtual time debt of packets flowing through the network

4   device, the filtered virtual time debt determined based on an average difference between a

5   time packets are expected to arrive and a time the packets actually arrive; and

6   determining whether a packet should be dropped based on the filtered virtual time

7   debt of the packets.

1   18. (Previously Presented): The method as in claim 17, further comprising: determining

2   that a packet should be dropped when a virtual time debt threshold has been reached.

1   19. (Previously Presented): The method as in claim 17, further comprising: determining

2   a moving average of the virtual time debt.

1   20. (Previously Presented): The method as in claim 17, further comprising: calculating

2   the virtual time debt as the difference between a time a packet is expected to arrive and a

3   time the packet actually arrives.

1   21. (Previously Presented): The method as in claim 20, further comprising: calculating

2   the time a packet is expected to arrive according to a traffic contract.

1   22. (Previously Presented): The method as in claim 17, further comprising: sampling the

2   virtual time debt at a sampling interval.

1   23. (Previously Presented): The method as in claim 17, further comprising:

2   generating a random number;

3   counting a number of packets passing through the network device up to the ran-

4   dom number; and

5   dropping a packet when the counted number reaches the random number.

1   24. (Currently Amended): A method of policing packets in a network device, the

2   method comprising the steps of:

3   determining a <u>filtered</u> virtual time debt of packets flowing through the network

4   device, the <u>filtered</u> virtual time debt computed as a<u>n average</u> positive delay from an ex-

5   pected packet arrival time established by a traffic contract to an actual packet arrival

6   time;

7   determining that packets should be dropped when the <u>filtered</u> virtual time debt of

8   the packets exceeds a predetermined value; and if so

9   choosing a packet to be dropped, the chosen packet in response to a random num-

10   ber; and

11   dropping the chosen packet.

1   25. (Currently Amended): The method as in claim 24, further comprising:

2   generating the random number;

3   counting a number of packets passing through the network device up to the ran-

4   dom number; and

5   dropping a packet when the counted number reaches the random number.

1   26. (Currently Amended): A policer, comprising:

2   means for determining a <u>filtered</u> virtual time debt of packets flowing through the

3   network device, the virtual time debt computed as a<u>n average</u> positive delay from an ex-

4   pected packet arrival time established by a traffic contract to an actual packet arrival

5   time;

6   means for determining that packets should be dropped when the virtual time debt

7   of the packets exceeds a predetermined value; and if so

8   means for choosing a packet to be dropped, the chosen packet in response to a

9   random number; and

10   means for dropping the chosen packet.

1   27. (Currently Amended): A computer readable media, the computer readable media

2   containing instructions for execution in a processor for the practice of the method com-

3   prising the steps of:

4   determining a filtered virtual time debt of packets flowing through the network

5   device, the filtered virtual time debt determined based on an average difference between a

6   time packets are expected to arrive and a time the packets actually arrive; and

7   determining whether a packet should be dropped based on the filtered virtual time

8   debt of the packets.

1   28. (Canceled).

1   29. (Currently Amended): A method of policing packets in a network device, the

2   method comprising the steps of:

3   determining a filtered virtual time debt of packets flowing through the network

4   device, the filtered virtual time debt computed as an average positive delay from an ex-

5   pected packet arrival time to an actual packet arrival time; and

6   determining whether a packet should be dropped based on the filtered virtual time

7   debt of the packets.

1   30. (Previously Presented): The method as in claim 29, in the event a packet should be

2   dropped, further comprising:

3   generating a random number;

4   counting a number of packets passing through the network device up to the ran-

5   dom number; and

6   dropping a packet when the counted number reaches the random number.

1   31. (Currently Amended): A method of policing packets in a network device, compris-

2   ing:

3   determining an actual arrival time of a packet;

4   determining a theoretical arrival time of the packet;

5   calculating a virtual time debt in response to the actual arrival time and the theo-

6   retical arrival time;

7   using a filter to determine a filtered virtual time debt of a traffic, the filtered vir-

8   tual time debt determined based on an average of a plurality of virtual time debts for the

9   traffic;

10   comparing the filtered virtual time debt with a predetermined value;

11   deciding if the filtered virtual time debt exceeds the predetermined value; and

12   generating, in response to the filtered virtual time debt exceeding the predeter-

13   mined value, a random number that is used to determine which packet should be dropped.

1   32. (Canceled).

1   33. (Currently Amended): The method of claim 31, further comprising:

2   using a time T in which the packet is expected to arrive; and

3   computing a predetermined output transmission rate.

1   34. (Previously Presented): The method of claim 33, further comprising:

2   setting the predetermined output transmission rate by a traffic contract.

1   35. (Currently Amended): The method of claim ~~32~~31, further comprising:

2   sampling the virtual time debt at a sampling interval; and

3   transmitting the sampled virtual time debt to the filter.

1   36. (Currently Amended): The method of claim 31, further comprising:

2   using a counter that is set with the generated random number ~~generated by the~~

3   ~~random number generator~~;

4   counting packets passing through a RED policer up to the set number;

5   dropping the packet when the counter has counted out the set number.

1   37. (Currently Amended): The method of claim 31, further comprising:

2   determining a moving average ~~of~~for the filtered virtual time debt.~~; and~~

3   ~~determining whether a packet should be dropped based on a value of the moving~~

4   ~~average of the virtual time debt.~~

1   38. (Currently Amended): A policer based on Random Early Detection (RED), compris-

2   ing:

3   an operating system ~~determines~~to determine an actual arrival time of a packet and

4   a theoretical arrival time of the packet;

5   a control law circuit ~~that calculates~~to i) calculate a virtual time debt in response to

6   the actual arrival time and the theoretical arrival time,

11

7   a filter to determine a filtered virtual time debt of a traffic, the filtered virtual time

8   debt determined based on an average of a plurality of virtual time debts for the traffic;

9   the control law circuit further to ii) ~~compares~~ compare the filtered virtual time

10 debt with a predetermined value, and iii) ~~decides~~ decide if the filtered virtual time debt

11 exceeds the predetermined value; and

12   a random number generator ~~that generates~~ to generate, in response to the filtered

13 virtual time debt exceeding the predetermined value, a random number that is used to de-

14 termine which packet should be dropped.

1   39. (Canceled).

1   40. (Currently Amended): The policer of claim 38, further comprising:

2   the filtered virtual time debt ~~uses~~ is configured to use time T in which the packet

3   is expected to arrive, and is computed using a predetermined output transmission rate.

1   41. (Previously Presented): The policer of claim 40, further comprising:

2   the predetermined output transmission rate is given by a traffic contract.

1   42. (Currently Amended): The policer of claim ~~39~~ 38, further comprising:

2   a sampler ~~that samples~~ to sample the virtual time debt at a sampling interval and

3   ~~transmits~~ to transmit the sampled virtual time debt to the filter.

1   43. (Currently Amended): The policer of claim 38, further comprising:

2   a counter ~~that is~~configured to be set with the number generated by the random

3   number generator, and ~~counts~~configured to count packets passing through the RED poli-

4   cer up to the set number; and

5   the RED policer ~~drops~~configured to drop the packet when the counter has

6   counted out the set number.

1   44. (Currently Amended): The policer of claim 38, further comprising:

2   ~~a~~the filter ~~that determines~~further to determine a moving average ~~of~~for the filtered

3   virtual time debt.~~; and~~

4   ~~a control law circuit that determines whether a packet should be dropped based on~~

5   ~~a value of the moving average of the virtual time debt.~~

1   45. (Currently Amended): An apparatus for policing packets in a network device, com-

2   prising:

3   means for determining an actual arrival time of a packet;

4   means for determining a theoretical arrival time of the packet;

5   means for calculating a virtual time debt in response to the actual arrival time and

6   the theoretical arrival time;

7   means for using a filter to determine a filtered virtual time debt of a traffic, the fil-

8   tered virtual time debt determined based on an average of a plurality of virtual time debts

9   for the traffic;

10   means for comparing the filtered virtual time debt with a predetermined value;

11   means for deciding if the filtered virtual time debt exceeds the predetermined

12   value; and

13

13   means for generating, in response to the <u>filtered</u> virtual time debt exceeding the

14   predetermined value, a random number that is used to determine which packet should be

15   dropped.

1   46. (Canceled).

1   47. (Currently Amended): The apparatus of claim 45, further comprising:

2   ———— means for using a time T in which the packet is expected to arrive; and

3   means for computing a predetermined output transmission rate.

1   48. (Previously Presented): The apparatus of claim 47, further comprising:

2   means for setting the predetermined output transmission rate by a traffic contract.

1   49. (Previously Presented): The apparatus of claim 46, further comprising:

2   means for sampling the virtual time debt at a sampling interval; and

3   means for transmitting the sampled virtual time debt to the filter.

1   50. (Previously Presented): The apparatus of claim 45, further comprising:

2   means for using a counter that is set with the number generated by the random

3   number generator;

4   means for counting packets passing through a RED policer up to the set number;

5   means for dropping the packet when the counter has counted out the set number.

1   51. (Currently Amended): The apparatus of claim 45, further comprising:

2   means for determining a moving average ~~of~~ for the filtered virtual time debt.~~; and~~

3   ~~means for determining whether a packet should be dropped based on a value of~~

4   ~~the moving average of the virtual time debt.~~

1   52. (Currently Amended): A computer readable medium having instructions contained

2   therein, which when executed by a computer performs a method comprising the steps of:

1   determining an actual arrival time of a packet;

2   determining a theoretical arrival time of the packet;

3   calculating a virtual time debt in response to the actual arrival time and the theo-

4   retical arrival time;

5   using a filter to determine a filtered virtual time debt of a traffic, the filtered vir-

6   tual time debt determined based on an average of a plurality of virtual time debts for the

7   traffic;

8   comparing the filtered virtual time debt with a predetermined value;

9   deciding if the filtered virtual time debt exceeds the predetermined value; and

10   generating, in response to the filtered virtual time debt exceeding the predeter-

11 mined value, a random number that is used to determine which packet should be dropped.

1   53. (Canceled).

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Please insert the following new claims 54 *et seq.*:

1   54. (New): The RED policer of claim 1, further comprising: the filter further configured
2   to calculate the average as an exponential weighted moving average (EWMA).

1   55. (New): The RED policer of claim 8, further comprising: means for calculating the
2   average as an exponential weighted moving average (EWMA).

1   56. (New): The network device of claim 11, further comprising: the filter further con-
2   figured to calculate the average as an exponential weighted moving average (EWMA).

1   57. (New): The method of claim 12, further comprising: calculating the average as an
2   exponential weighted moving average (EWMA).

1   58. (New): The medium of claim 14, further comprising the step of: calculating the av-
2   erage as an exponential weighted moving average (EWMA).

1   59. (New): The method of claim 17, further comprising: calculating the average as an
2   exponential weighted moving average (EWMA).

1   60. (New): The method of claim 24, further comprising: calculating the average as an
2   exponential weighted moving average (EWMA).

1 61. (New): The policer of claim 26, further comprising: means for calculating the aver-
2 age as an exponential weighted moving average (EWMA).

1 62. (New): The medium of claim 27, further comprising the step of: calculating the av-
2 erage as an exponential weighted moving average (EWMA).

1 63. (New): The method of claim 29, further comprising: calculating the average as an
2 exponential weighted moving average (EWMA).

1 64. (New): The method of claim 31, further comprising: calculating the average as an
2 exponential weighted moving average (EWMA).

1 65. (New): The policer of claim 38, further comprising: the filter further configured to
2 calculate the average as an exponential weighted moving average (EWMA).

1 66. (New): The apparatus of claim 45, further comprising: means for calculating the av-
2 erage as an exponential weighted moving average (EWMA).

1 67. (New): The medium of claim 52, further comprising the step of: calculating the av-
2 erage as an exponential weighted moving average (EWMA).